

AI in the working world

Executive Summary

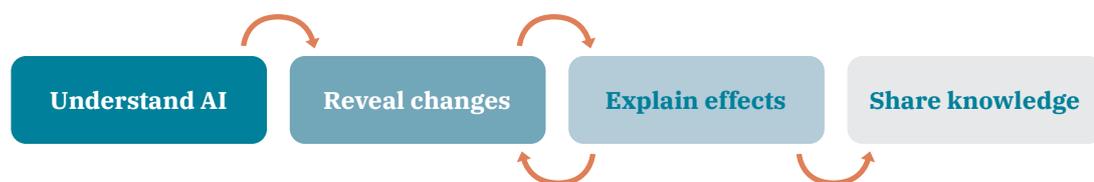


Artificial intelligence in the working world – a social partnership research project by IBM and ver.di

Published by: IBM Deutschland GmbH and ver.di

New technologies are changing our working world. The year 2020 has just shown us, very clearly, how rapid and permanent such changes can be; COVID-19 has acted as an accelerator for digitalisation. New technologies such as artificial intelligence (AI) have enabled us to respond flexibly and it has also been possible to solve emerging challenges and problems more quickly. However, the use of AI has once again raised the question of how we as society should respond to this increased technological transformation: opinions on issues such as AI vary widely. Some see AI as an opportunity, others find it highly questionable. How will it change our working world? How can it be usefully integrated into business processes and how will it affect employees?

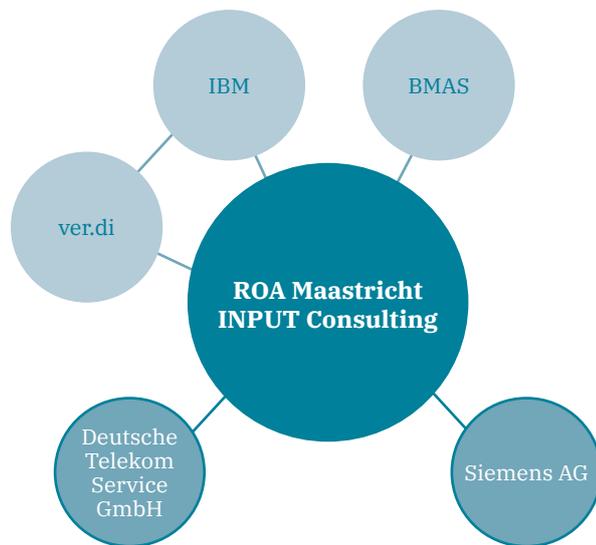
The hopes and fears of both sides deserve consideration, because AI will indeed change our working world. It is forecasted that some 3.3 million new jobs will come into being by 2035. At the same time, a 2019 study by the German Federal Ministry for Labour and Social Affairs (BMAS) indicates that around 4 million jobs will disappear. The ultimate effects of these developments will depend to a great extent on the social partnership collaboration between employers, trade unions/ works councils and the political and scientific communities. After all, the working world of the future will be shaped by people, not by technology. A key issue here is that technological change should also lead to progress in social terms. If this goal is to be achieved, we need information about the use and concrete effects of AI at the workplace. This kind of information is supplied by, for instance, a research project carried out jointly by the trade union ver.di and IBM. The project has been realised in collaboration with the Federal Ministry for Labour and Social Affairs (BMAS) and by the Research Centre for Education and the Labour Market (ROA) of Maastricht University and INPUT Consulting. The focus here was on the concrete effects of AI in work at large companies - examined on the basis of two case studies at Siemens AG and Deutsche Telekom Service GmbH.



Knowledge as basis for AI use in context of social partnership

Flexible research in a diverse team

The research project centred around the idea of shared learning, exploration and experimentation with a diverse team from the fields of economics and sociology, AI experts from IBM, trade union representatives and works councils, as well as BMAS together with its think tank. In addition, representatives and employees of the two companies in the case study, Siemens AG and Deutsche Telekom Service GmbH, were also involved. So it was an initially small, flexible project that had room to grow and soon augmented its original, purely research-oriented project goals with social partnership initiatives. Co-creative workshops for designing questionnaires led to trans-disciplinary dialogue and the classic project report morphed into a brochure intended to give valuable ideas and encouragement to all interested parties (*you can find the link to the brochure at the end of this document*).



Project network and involved organisations

The project looked at an issue that had received little research until then: the identification and quantification of causal effects of AI use on productivity and on quality of work, expressed partly in questions such as:

- How does the use of AI change the work of staff? What new tasks arise, what tasks disappear?
- What effect does AI have at the workplace...
 - a. ...on productivity and job performance – do employees achieve greater and better productivity when assisted by AI?
 - b. ...on quality of work and job satisfaction?
 - c. ...on the skills profiles of jobs?

Various methods were combined in order to examine the effects of AI use on people and on work. In addition to a scientific field experiment, the methods

included statistical data analyses as well as interviews and employee surveys. The study looked at the job types and work activities of many employees, such as clerical processing, human resources and customer service. These professional fields were not only chosen because the associated results have high transferability to related areas of work but also because these fields are already being changed today through the use of AI-based technologies.

It transpired that this joint project produces basic research with concrete applicability. The project results can make an important contribution to business cases and to people-centric shaping of the current and future working world.

AI as a service for employees

From the smart support of a chatbot in customer service, by way of visual inspection of manufacturing components in production, through to CIMON, the free-flying robot on the International Space Station ISS: it's hard to find an area where smart systems are not already being used to support people, either right now or in the near future. Two cases studies in the framework of the research project were used to examine how AI use is affecting employees. One of these studies looked at CARL (Cognitive Advisor for Interactive User Relationship and Continuous Learning), a system operating at Siemens AG:

CARL, a SPoC (Single Point of Contact) solution with chatbot, based on IBM Watson, has been in use in the personnel department of Siemens AG since 2017. This AI solution is available to employees 24/7 and answers questions on issues, applications and processes in the HR field. To date, CARL has been rolled out in 30 countries and is used by employees over 1,5 million times each month.

As part of the research project, the effects of this AI use on the HR specialists in HR Shared Service were examined. The focus of the analyses here was the work itself and the quality of work life. In interviews the HR specialists confirmed, among other things, a subjective increase in their productivity and efficiency through the use of CARL, together with a reduction in repetitive tasks.

Moreover, the introduction of this AI led to new tasks such as content creation and the provision of data for training the chatbot ('technology enabling') which the employees view as a plus but which do not essentially lead to the creation of new jobs. The new tasks were viewed by the HR specialists as interesting and challenging. In general terms it became clear that the overall group of respondents had not been significantly changed by the use of AI, but rather the *manner* in which they work.

Moreover it transpired that the chatbot is perceived in a personalised and mostly positive way - and not only because it occasionally tells a joke or finds encouraging words. The HR specialists regard the CARL chatbot as a useful assistant - for themselves, too. The case study also shows that this AI is still performing at a lower level than it will be able to in the future. Currently there are various technological, organisational, strategic and also cultural and socio-political sticking points that are inhibiting the development of a powerful AI. In the future, AI solutions such as CARL can help to transform professions whereby fewer people will be required than they are today. Once this happens, we will need new studies on the consequences of technology for people and work.

PIA – the Personal Interactive Assistant

For the second case study, a randomised controlled field experiment was conducted at Deutsche Telekom Service GmbH. This involved a test group that started working with technology assistance in the course of the study, as well as a control group without this assistance.

PIA is an ‘attended automation’ or alternatively a ‘robotic desktop automation’ (also see the info box), designed to augment existing IT systems and to carry out processes on a semi-automatic basis in interaction with users. Its successive roll-out at selected service centre units of Telekom Service GmbH took place in spring 2020. In this organisation, ca. 20,000 employees answer over 90 million queries from private and business customers every year. Here they are faced with the challenge that the spectrum of products and services is ever more diverse, while the increasingly networked homes and offices of the customers are growing more and more complex. At the same time, the importance of customer service in competition is constantly increasing and customer expectations are also rising.

According to the Group, the use of PIA is intended to increase service quality and employee satisfaction. In order to achieve this the AI assistance application has four basic functions:

- Automated adoption of routine tasks (automation).
- Retrieval and transfer for information (information retrieval).
- Accessing secondary systems (interface).
- Reminding employees of work steps and process-oriented support (guidance).

The customer service workers retain sovereignty over the order processing. This responsible and strategic approach is in line with the code of ethics for handling artificial intelligence, which Telekom adopted in 2018. PIA’s focus is on relieving the workload by taking over standard tasks, which allows employees to concentrate fully on customer dialogues, hence supporting a shift of their role from ‘system operative’ to a more empathetic form of customer service. Moreover, working with the assistance system trains the employees to deal with AI-like applications and hence to develop corresponding AI skills, which is highly relevant to the working world of the future.

The case study aimed to answer the following questions:

- How does the introduction of PIA affect service quality and performance on the part of the customer service workers?
- How does PIA affect the quality of work life and the job satisfaction of the customer service workers?
- How does PIA change the competencies and task profile required in the job of customer service worker?

The study focussed on the effects of the technology introduction in the first weeks after roll-out. One aspect revealed here was that overall customer satisfaction regarding the customer service remained steady despite a slight deterioration in the problem solving rate.

The skills and abilities used in this job, the work tasks to be dealt with and the competency profile of the job description 'customer service worker' did not change in a statistically significant way due to the use of robotic desktop automation. The technology had no measurable influence on the quality of work life. The employees did not feel subject to more external control, nor did they become less satisfied or feel stressed by the use of technology – on the contrary, the employees actually experienced a slight stress reduction following introduction of PIA. In response to a question about job security included in an employee survey, the respondents answered that they did not see their job as being threatened by AI.

Human and AI – a team with a future

Do the employees see AI as a threat to their own job? When asked if they think that CARL will influence their career-related plans for the future and whether they regard their income and job as secure, all surveyed employees of Siemens AG said that they see their job as secure and they assume CARL will not affect their future career. However, this perception is at odds with the actual developments and consequences of technology that will occur in the future and which will contribute to fewer people being required in the researched jobs and professions.

The effects of these and future developments depend on how we plan and realise the use of AI. Hence AI applications should always be viewed from the perspectives of employees and managers, too, and even at initial implementation we should consider the consequences of the technology. The development of new abilities will be one aspect to play an essential role in the use of AI. This relates to issues such as the design and development of AI solutions, as well as their application. Furthermore, human soft skills like empathy, decision-making powers or critical and abstract thinking will be important – because people will continue to be better than AI in these areas. It is a question of how the working world is shaped, which professions will gain in importance in the future, which professions will be carried out primarily by people, which by machines and which jointly by both.

The priority of ver.de is to shape the working world constructively and positively for employees. Better services, social development and new employment possibilities have the best chance of arising when the needs of all parties are considered, i.e. the needs of both employees and customers, when useful and necessary services are developed and when digital tasks are realised in the sense of 'decent work'. Part of this approach includes researching the effects of AI use in long-term studies.

The use of AI can have positive effects on the quality of an employee's working life and on their job satisfaction, but it needs a clear framework. On the basis of the insights and lines of thought gained through the project, the social partners aim to help shape the transition and also to help remove any fears that employees may feel and to support the use of opportunities. This requires ongoing work which, among other things, is regarded as a learning process. In this project, IBM and ver.di are together venturing a new form of cooperation and dialogue that is appropriate to this theme. In terms of collective agreement issues, a framework for qualification of employees and for workplace health promotion has already been created.

With regard to workplace codetermination, IBM has taken a pioneering role by introducing an AI framework agreement. Together with the corporate works council, an agreement on the introduction and use of AI systems was concluded in 2020. One of the issues addressed here is that data will be compiled in accordance with current legal regulations and be used in line with ethical principles. Accordingly a further major element of the agreement is the creation of an AI ethics council to advise employers and codetermination bodies on the introduction and use of AI systems and to monitor compliance with the defined values, such as transparency of AI systems, explainability of the results and fairness of the recommendations. With this move, IBM has become one of the first companies in Germany to create the conditions for a trustworthy approach to AI systems.

The information brochure on the research project is available via this [link](#).



AI applications are becoming increasingly familiar in our working world. We are already encountering these 'colleagues' on a regular basis:

Chatbots are systems that enter into dialogue with people by means of natural language. These applications are frequently trained to address selected themes on which they provide people with information. AI is mostly used here so that the IT system can reliably understand the diversity of our natural language and hence work with it. Chatbots exist in many variants, especially in combination with physical systems (e.g. service robots) or digital manifestations (e.g. avatars). If communication takes place not only in written form (chatting) but also, or only, through spoken language then this variant is known as **voicebots**.

With **Robotic Desktop Automation**, activities are transferred to a robot and performed automatically by it, for example in the area of information processing. The spectrum ranges from standardised process execution by the machine to the automation of extensive business processes and the automation of more complex cognitive tasks.

Machine vision involves AI systems that can recognise and classify pictorial content. To give one example, these AI applications can autonomously recognise faulty manufactured components and independently eliminate them on the basis of an automated inspection.

